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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Laurence M.C. Lai

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WOMBLE CARLYLE SANDRIDGE & RICE, PLLC

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EXAMINER

ALANKO, ANITA KAREN

ART UNIT

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1792

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/989,898

Applicant(s)

LAI ET AL.

Examiner

Anita K. Alanko

Art Unit

1792

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-33 and 35-58 is/are pending in the application.
- 4a) Of the above claim(s) 40, 43-48, 50 and 52-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-33, 35-39, 41, 42, 49, 51 and 52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO-SB06)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 2/28/08/1/9/08

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: although depicted in the drawings, the specification lacks explicit basis for the newly added claim terminology that the features have identical length, width, thickness, the width being uniform along the length of the respective function feature, and being mirror images of one another.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25-33, 35-39, 41-42, 49, 51-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term “substantially” in the independent claims 25, 28, 32, 39 and 49 render the claims unclear in scope. How uniform must the patterns be? Within 10%, 20%, 50% of each other in length, width, thickness and uniformity? The term "substantially" is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The dependent claims 26-27, 29-31, 33, 35-38, 41-42, 51-52 fail to cure the indefiniteness of their base claims and are therefore also rejected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 25-33, 35-39 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-331956 in view of Beckett (US 5,340,436) and Lichtblau (US 3,913,219).

JP 09-331956 discloses a method comprising:

photoetching (see paragraph [0033] of English translation) a metal foil on a resin film 20 to form coils 22 on both sides of the resin film ([0027], Fig.5B). As depicted in Fig.5B, the coils are identical in length, width, thickness, the width being uniform along the length of the functional feature, and the coils are mirror images of one another.

JP 09-331956 fails to disclose applying first and second etch-resistant patterns to the metal layer of the web. However, it is conventional in the art to conduct photoetching by applying a mask and then etching to form a pattern in the layer that is being etched. It would have been obvious to one with ordinary skill in the art to apply first and second etch-resistant patterns as cited in the method of JP 09-331956 because it is a conventional technique in photoetching, and is expected to yield the predictable result of enabling patterning of metal layers by etching.

JP 09-331956 fails to disclose that the etching is “wet” etching and also fails to disclose washing the etchant from the web.

Beckett teaches that a useful method to pattern a metal layer 12 on a flexible substrate 14 includes wet etching 28, followed by washing 56.

Lichtblau also teaches that etching is useful for patterning metal layers on flexible webs. Lichtblau teaches a method for demetallizing a web comprising:

exposing both sides of the web 44 to a liquid etchant (by passing the web 98 through a continuous spray etching apparatus 100) to effect removal of metal-containing material from areas of the web not protected by the first and second etch-resistant patterns; and

washing the etchant from the web (with water rinse apparatus 112).

It would have been obvious to pattern by wet etching followed by washing in the method of JP 09-331956 because Beckett and Lichtblau teach that to do so is useful for patterning metal layers on flexible substrates.

As to claims 26 and 27, Beckett teaches to use either an etch bath 28 or spraying (col.10, lines 31-36). Lichtblau teaches to spray etchant 100. It is obvious to use the method of Beckett or Lichtblau in JP 09-331956 in order to achieve the predictable result of etching.

As to claim 28, Beckett teaches to use sodium hydroxide-resistant materials (col.4, lines 19-20, 48-50) and NaOH bath 36. It is obvious to use the method of Beckett or Lichtblau in JP 09-331956 in order to achieve the predictable result of etching.

As to claim 29, JP 09-331956 discloses that the first and second metal layers are of equivalent thicknesses (as shown in Fig.5B).

As to claim 30, JP 09-331956 discloses that the portions are symmetrical and in registration (as shown in Fig.5B).

As to claim 31, JP 09-331956 discloses to electrically connect the first and second parts ([0033] for example, by using a through hole).

As to claims 32-33, 39 and 49, JP 09-331956 discloses apportioning since the thicknesses are predetermined (since they are equal) and are the same on both sides of the flexible substrate.

As to claims 35-37, see the rejection of claims 26, 27 and 30.

As to claim 38, Beckett teaches to use a spindle (Fig.1), which is obvious to use in the method of JP 09-331956 in order to facilitate handling of the substrate.

Claims 41-42 and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-331956 in view of Beckett (US 5,340,436), Lichtblau (US 3,913,219) and George (US 3,764,459).

The discussion of modified JP 09-331956 from above is repeated here.

As to claims 31, 42 and 52, JP 09-331956 discloses to electrically connect the first and second parts ([0033] for example, by using a through hole). JP 09-331956 fails to disclose that the layers are crimped together in order to electrically fasten them.

George teaches that metal layers (aluminum) that extend from a substrate (such as paper or polymers, col.3, lines 50-55) may be joined electrically by crimping (col.5, lines 29-32). It would have been obvious to crimp to electrically join in the method of JP 09-331956 because George teaches that crimping is a known, useful method for electrically joining metal layers with an intervening substrate. The modified method of JP 09-331956 would have performed the same function (electrically connecting) as if done separately. In addition, one of ordinary skill in the

art would have recognized that the results of the combination are predictable, that of achieving electrical connection.

Response to Amendment

The rejection over Reilly is withdrawn in view of the claim amendment that the metal-containing layer patterns are mirror images of one another. In Reilly, the patterns are in registration, but offset from each other, and are thus not mirror images.

The specification is objected to since it lacks explicit basis for the newly added claim limitations.

The claims are rejected over newly cited JP 09-331956, which discloses etching of metal layers on both sides of a flexible film to form mirror image patterns.

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K. Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Anita K Alanko/
Primary Examiner
Art Unit 1792